gold, building stone, molybdenite, brick clays, ochre, and shell-marl. Report No. 971 is devoted to Mr. E. D. Ingalls's statistical review of the mineral industries of Canada for 1905. Although, unfortunately, somewhat belated, this report, which covers 174 pages, gives complete and revised information for the year 1905, advance provisional mineral statistics of which were issued on March 2, 1906.

The grand total of the mineral production of Canada is valued at 13,905,034*l*. The most valuable mineral product is coal, which accounts for 25·2 per cent. of the whole. Metallic minerals contributed together 54 per cent., structural materials 14 per cent., and other non-metallic minerals 5 per cent. Compared with the previous year, substantial increases are shown by all the leading industries, except in the case of gold, due to the continuous decrease of the Yukon placers. An interesting feature is the remarkable increase in the output of cobalt. The large supply of this metal rendered available as a result of the discoveries at Cobalt, Ontario, had, however, a depressing effect on the market, and caused a very marked decrease in price. Lastly, Report No. 1017 is devoted to a summary of the work done by the department of mines, Geological Survey, during the year 1907. It covers 132 pages, and its prompt publication deserves special commendation. There were in the field twenty parties, and the summary reports indicate that a large amount of valuable work was carried out, one of the chief results being the determination of enormous quantities of available bituminous coal in the Yukon region.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

ST. ANDREWS.—After a delay of more than a quarter of a century, at last, by the munificence of Mrs. Bell Pettigrew, the widow of the late professor of medicine and anatomy, a sum of 6000*l*. has been generously offered for the new museum of natural history of the University in which her husband laboured so long. The present museum was erected by the Government in 1846, and whilst its exterior is in keeping with the other substantial buildings in the quadrangle, its mode of lighting and its cases are far behind date. Moreover, its crowded shelves not only render proper exhibition of the specimens impossible, but interfere with classification. In all probability a new lecture-room, a practical class-room, and rooms for curator and workers will be attached to the museum.

CAMBRIDGE.—The essays for which the Smith's prizes are adjudged are as follows (the names are arranged in alphabetical order):—"Problems in the Wave-motion of Viscous Liquids," W. J. Harrison, Clare College; "On the Asymptotic Behaviour of Integral Functions of Zero Order, and Allied Problems," J. E. Littlewood, Trinity College; "On the Solution of Ordinary Linear Differential Equations having Doubly Periodic Coefficients," J. Mercer, Trinity College. The adjudicators are of opinion that the following essays are deserving of honourable mention, viz.:—"On Energy Accelerations and Partition of Energy," C. W. Follett, Trinity Hall; "On some Problems in the Theory of Metallic Reflection," H. R. Hassé, St. John's College; "The Geometry of Apolar Triads," W. P. Milne, Clare College; "Perpetuant Syzygies of the *n*th Kind," H. T. H. Piaggio, St. John's College; "The Reflection of Plane Waves of Light at the Surface of a Medium of Special Periodic Character," C. J. T. Sewell, Trinity College.

J. B. Hubrecht, Christ's College, has been elected to the Isaac Newton studentship, tenable from April 15, 1908, to April 15, 1911. The student will carry on a course of research in solar physics.

H. H. Arnold-Bemrose, Clare College; W. F. Sheppard, Trinity College; J. R. Sutton, Sidney Sussex College; and A. Young, Clare College, have been approved by the general board of studies for the degree of Doctor in Science.

The Vice-Chancellor has announced to the Senate that donations of 1000*l*. each, in memory of the late Mr. Walter K. Foster, have been promised towards the building fund of the new museum of archæology and of ethnology by Mrs. Walter K. Foster, Mr. E. Bird Foster, Mr. C. F. Foster, and Mrs. E. Rawlings. Mr. Foster, in whose memory this munificent gift has been made, bequeathed to the University in 1891 an extensive collection of prehistoric and Anglo-Saxon antiquities.

LONDON.—Dr. H. T. Bovey, F.R.S., has been appointed Rector of the Imperial College of Science and Technology at South Kensington. Dr. Bovey was educated at Cambridge. He was twelfth wrangler in 1873, and was elected a fellow of Queen's College. Before going to Canada in 1887 as professor of civil engineering and applied mechanics in McGill University, Montreal, he practised as a civil engineer, being engaged on important works on the Mersey. Under Dr. Bovey's direction the civil engineering department at McGill University acquired a considerable reputation both for undergraduate and research work. Recently a course of study in transportation was added to the seven other engineering courses. The work in this subject is liberally supported by the great Canadian railway companies. In 1888 Dr. Bovey was appointed dean of applied science in McGill University. It is well known that McGill University is excellently equipped both for engineering and applied science. In the chemistry department, for example, there are special laboratories for organic chemistry, physical chemistry, electrolytic analysis, iron and steel analysis, fire assaying, water analysis, determinative mineralogy, petrography, and photography. Dr. Bovey's experience both in engineering and science is therefore exceptionally wide. His literary output includes works on applied mechanics, theory of structures and strength of materials, and hydraulics, in addition to a number of scientific papers. He was elected a Fellow of the Royal Society in 1902.

The London County Council proposes to make a grant of 5000*l*. for the current year to the Imperial College, without, however, pledging itself to contribute 20,000*l*. a year in the future, as was intended if the original scheme for the college, by which it was proposed to establish a well-equipped institution for higher work in applied science and technology, independent of other institutions at South Kensington, had been carried out.

BY the will of the late Mrs. Rylands, the Victoria University, Manchester, will receive the sum of 50,000*l*.; Owens College, Manchester, 25,000*l*.; and Mansfield College, Oxford, 10,000*l*.

THE *British Medical Journal* announces that Prof. Wilhelm Erb has given the University of Heidelberg a donation of 5000*l*., one half to be applied for the benefit of students and assistants and their maintenance in hospital when required, the other towards the promotion of scientific research by students.

WE have received from Messrs. Swan Sonnenschein and Co., Ltd., copies of the 1908 issues of "The Public Schools Year-book and Preparatory Schools Year-book" (price 3*s*. 6*d*. net), and "The Schoolmasters Year-book and Directory" (price 7*s*. 6*d*. net). Both books have become well known to educational workers as useful volumes of reference. The annual dealing specifically with the public schools, those, that is, which are connected with the Headmasters' Conference, provides details concerning the public schools which a parent seeking a school for his boy wishes to know. But the book contains much other useful information about preparatory schools, scholarships available, and the public examinations which qualify for entrance into the professions. There is, in addition, a section dealing with the various professions themselves which should prove invaluable to fathers whose sons have completed their school careers. The second volume appeals more directly to schoolmasters and others concerned in the administration of education. The extensive organisations throughout the country for the administration of secondary education are summarised; there is a chronicle of educational events during 1907; and particulars are given about educational societies and publications, examinations and inspecting bodies, and miscellaneous matters. More than half the volume is devoted to a very complete directory providing detailed information concerning the qualifications and experience of masters teaching in secondary schools.

© 1908 Nature Publishing Group

MANY of the numbers in the "Statistics of Public Education in England and Wales, 1905–6–7," recently published (Cd. 3886) by the Board of Education, give useful information as to the condition of our national education during the year 1905–6 and the years immediately preceding. On August 1, 1906, accommodation was provided in the public elementary schools of all grades for 7,068,641 children, of which number of places 3,543,760 were in "council" schools, or, as they were formerly called, "board" schools. In ordinary elementary schools, that is, omitting every kind of "special" school, there were 5,994,490 pupils on the registers and 5,303,229 in average attendance. These children were taught by 31,893 head teachers, 93,130 assistant teachers, and 49,056 "other" teachers. The Government grant to meet expenditure in respect of elementary education during 1906–7 reached 11,248,794*l*., and in 1905–6 was 10,829,396*l*. In addition, 92,328*l*. was paid in 1906–7 on account of allowances and pensions for teachers, and 552,894*l*. for the training of teachers and pupil-teachers. In secondary schools in receipt of grants from the Board of Education, which in 1905–6 numbered 689, there were in that year 65,994 boys and 49,694 girls, and on 66,014 of these pupils—for grants were only paid on children between twelve and sixteen years of age taking an approved course of work—the sum paid in grants amounted to 246,220*l*. A serious falling off in the number of pupils in secondary schools between the ages of twelve and sixteen years is shown in the statistics. To take one example, the number of boys (about twelve to thirteen years of age) taking an approved course and doing the work of the first year was, in 1905–6, 12,238; doing the second year's work, 9,924; the third year's work, 4,907; and the fourth year's work, 2,397. It would seem that less than 20 per cent. of the boys who at twelve years of age begin the approved course of work remain at school until sixteen years of age, and the same proportion seems to be true in the case of the girls.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 14, 1907.—"On the Result of Crossing Round with Wrinkled Peas, with Especial Reference to their Starch-grains." By A. D. **Darbishire.** Communicated by Prof. J. Bretland Farmer, F.R.S.

The facts so far brought to light are:—

(1) That, although roundness is dominant over wrinkledness in peas, the starch-grain of the F_1 generation (the round or *r*-grain) is a blend between the type of grain of the round pea (the potato-shaped or *p*-grain) and the type of grain of the wrinkled pea (the compound or *c*-grain) in respect of three characters:—

(*a*) It is intermediate in shape as measured by its length-breadth index—that of the *p*-grain being 66, that of the *c*-grain 92, and that of the *r*-grain 85 (neglecting decimals).

(*b*) It is intermediate in the distribution of compoundness, inasmuch as some of the *r*-grains are compound and some single.

(*c*) It is intermediate in the degree of compoundness, inasmuch as amongst those *r*-grains which are compound the most usual number of constituent pieces is three, whereas in *c*-grains it is six.

(2) In a subsequent generation—F_5—the homozygote round peas contain *p*-grains; the heterozygote round peas contain *r*- or intermediate grains. But both *r*- and intermediate grains may be associated either with a high or with a low degree of compoundness.

(3) *p*-Grains occasionally occur in wrinkled peas in F_5, and the evidence suggests that the existence of these grains in wrinkled peas tends to make them less wrinkled.

(4) A wrinkled pea takes up more water when it germinates than a round one. The hybrid between a round and a wrinkled pea is intermediate in respect of this character between its two parents.

(5) But this intermediateness of the hybrid in absorptive capacity is not occasioned by the intermediateness of the starch-grain of the hybrid, because, in F_2, peas containing *r*-grains *and peas containing* p-*grains* both have the same absorptive capacity as the F_1 pea.

(6) When, therefore, we cross a round with a wrinkled pea, we are dealing with *four* separately heritable characters:—

(i) The shape of the pea—whether round or wrinkled.

(ii) The absorptive capacity of the pea—whether low or high.

(iii) The shape of the starch-grain—whether long or round.

(iv) The constitution of the starch-grain—whether single or compound.

"On the Inheritance of Eye-colour in Man." By C. C. **Hurst.** Communicated by W. Bateson, F.R.S.

An examination of the eye-colours of a number of parents and their offspring in a Leicestershire village shows that there are at least two discontinuous types of iris in man:—

(1) The duplex type, with both anterior and posterior pigments, as in ordinary brown eyes.

(2) The simplex type, with posterior pigment only, the anterior pigment being absent, as in clear blue eyes.

In heredity the simplex type behaves as a Mendelian recessive to the duplex type, which is dominant. The unit characters concerned are evidently presence (duplex) and absence (simplex) of anterior pigment on a basis of posterior pigment, presence being dominant.

The duplex and simplex types can be distinguished at any age. Various pigmental and structural changes take place in the iris during childhood and youth, the extent of which is not yet known. Few families with living parents and offspring, all adult, are to be found in one village. Consequently, it has not yet been possible to determine the genetic relations between the various shades of the duplex type.

Mathematical Society, February 13.—Prof. W. Burnside, president, in the chair.—A proof that every algebraic equation has a root: Dr. H. A. de S. **Pittard.**—Note on *q*-differences: F. H. **Jackson.**—An extension of Eisenstein's law of reciprocity (second paper): A. E. **Western.**—Conformal representation and the transformation of Laplace's equation: E. **Cunningham.**—The uniform approach of a continuous function to its limit: Dr. W. H. **Young.**

Physical Society, January 24.—Prof. J. Perry, F.R.S., president, in the chair.—Observations on recalescence curves: W. **Rosenhain.** Referring to the importance of the accurate study of recalescence phenomena in metals and alloys, the author describes the two principal methods employed for obtaining recalescence curves. These are known as the "inverse rate" and "differential" methods respectively. In the former method the times occupied by successive equal decrements of temperature are observed and plotted against the temperature of the cooling body, thus giving a curve the ordinates of which are temperature (t) and dT/dt (T = time) respectively. In the differential method the difference of temperature between the body under observation and a neutral or "blank" body cooling under approximately the same conditions is observed and plotted against the temperature of the body. The physical interpretations, in terms of quantity of heat evolved and of rate of evolution of heat of these two kinds of curves, are discussed by reference to the fundamental curve representing the time-temperature relations of one or two cooling bodies. Finally, the author describes a recalescence first observed to occur somewhat mysteriously in the body of certain furnaces at a temperature of 580° C. This was ultimately traced to a transformation occurring in crystalline silica, whether free or in admixture with porcelain or fire-clay. The author points out that this recalescence in crystalline silica coincides with certain points in the iron-carbon diagram of Roberts-Austen and of Carpenter and Keeling, and suggests that the recalescences observed by those workers may have arisen from silica in their furnaces.

Society of Chemical Industry, February 3.—Dr. J. Lewkowitsch in the chair.—Nitroglycerine and its manufacture: Lieut.-Colonel Sir F. L. **Nathan** and W. **Rintoul.** The discovery and properties of nitroglycerine were described, and particulars were given of improvements which have been effected in methods of manufacture.

© 1908 Nature Publishing Group